

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA
RICHMOND DIVISION

THE TRUSTEES OF COLUMBIA
UNIVERSITY IN THE CITY OF NEW
YORK,

Plaintiff

vs.

SYMANTEC CORPORATION,

Defendant

Civil Action No. 3:13-cv-00808-JRS

JURY TRIAL DEMANDED

**SYMANTEC CORPORATION'S REPLY IN SUPPORT OF ITS
MOTION FOR JUDGMENT ON THE PLEADINGS**

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Pursuant to Federal Rule of Civil Procedure 12(c), Defendant Symantec Corporation (“Symantec”) respectfully submits this reply in support of Symantec’s motion for judgment on the pleadings that the asserted patent claims are invalid as a matter of law under 35 U.S.C. § 101.

I. INTRODUCTION

Columbia's opposition relies on the premise that the asserted claims recite patentable subject matter because they purportedly improve computer functionality rather than merely use a computer as a tool. Columbia seeks shelter under a narrow set of Federal Circuit cases post-*Alice* that have rejected invalidity challenges under § 101. But those cases are inapposite because, as shown by the specification and the plain language of the claims, the purported invention does not improve computer functionality. The specification states that *any* algorithm, *any* software or *any* hardware can be used to accomplish the embodiments of the claims. Columbia fails to address the statements in the patent specification regarding what was known in the art, statements which were confirmed in *inter partes* review proceedings finding that nearly all limitations in the asserted patents were present in the prior art. Put most simply, Columbia does not and cannot specify what, before the claimed invention, a computer security system “could not do before” but can, after the invention, do now.

Under the second step of *Alice*, Columbia argues that the “model of function calls” as a combined model or when the model is randomly selected provides an inventive concept. But conventional limitations relating to selecting data and selecting which computers perform a task are just the sort of limitations that—drafted at such a high level of generality—the Federal Circuit has found do not amount to an inventive step. Whether the model of function calls is a combined model or randomly selected, a function call is still being compared to a model of function calls. This is simply data being compared to other data. As drafted, these elements are not a “special improvement in computer technology” and fail to provide an inventive concept.

Accordingly, Symantec respectfully requests that the Court grant its timely motion for judgment on the pleadings that all asserted claims are invalid under 35 U.S.C. § 101.¹

II. BACKGROUND CONCERNING KEY LIMITATIONS IN THE ASSERTED CLAIMS

As an initial matter, it is important to understand what is, without dispute, *not* an improvement in computer functionality within the asserted claims, as Columbia’s opposition often blurs the distinction between what is and what is not new. The claimed invention does not introduce the idea of a “behavior-based virus scan.” Columbia acknowledges that that concept was disclosed in the patent at issue in *Finjan, Inc. v. Blue Coat Sys., Inc.*, 879 F.3d 1299 (Fed. Cir. 2018), which was filed in 1996. Columbia Br. at 13. The claimed invention does not introduce the idea of using an “emulator” to collect information about a program. That term is defined broadly to include *any* software that, alone or in combination with hardware, can monitor and selectively execute certain parts, or all, of a program. Dkt. 246 (“Symantec Br.”) at 4. The specification further states that collecting information on function calls was not new, noting that this information can be collected by “any . . . suitable technique.” *Id.* at 3:28-37. The claimed invention does not introduce the idea of performing anomaly detection with system calls. *Id.* at 6:21-23; *id.* at 3 (citing a 1998 paper regarding “[i]ntrusion detection using sequences of system calls.”)² The claimed invention does not introduce the idea of using a

¹ Columbia suggests that Symantec’s motion is untimely. Columbia Br. at 1-2. Columbia cites no rule or law in support of this position. Rule 12(c) is plain—so long as the motion does not “delay trial,” it is timely. In addition, this motion is based on the Supreme Court’s June, 2014 *Alice* decision and subsequent Federal Circuit case law developing that test. This case law was not developed at the time of stay.

² The patent claims to improve existing system call anomaly detection techniques by incorporating information on “arguments” (’115 Patent at 27-30), but claims directed to this purported improvement (such as claim 6 of the ’115 Patent) were invalidated in *inter partes*

model for anomaly detection. The patent specification describes *existing* modeling techniques using, e.g., “OCSVM” (Symantec Br. at 15, n.9), but the asserted claims do not require any particular technique. Instead, the patent specification notes that “any . . . suitable algorithm” can be used for anomaly detection. ’115 patent at 3:16-19. Certain of the asserted claims relate to combining models, but the patent specification acknowledges that techniques for “algorithmically combin[ing]” multiple models were not new, stating that it can be done “using any of a variety of suitable means.” *Id.* at 8:16-21. Other asserted claims are directed to “notifying an application community that includes a plurality of computers of the anomalous function call,” but that amounts to no more than telling another computer of an anomaly, which the asserted patents nowhere claim to be novel. With respect to randomization, the patent specification states that this process is controlled by the conventional use of “software registration key[s] provided by a commercial off-the-shelf (COTS) software vendor.” *Id.* at 7:1-4.

Consistent with the foregoing, the Patent Trademark and Appeal Board (PTAB) found claims containing the above limitations invalid³, such as claim 1 of the ’115 patent, below:

1. A method for detecting anomalous program executions, comprising:
 - executing at least a part of a program in an emulator;
 - comparing a function call made in the emulator to a model of function calls for the at least a part of the program;
 - identifying the function call as anomalous based on the comparison; and

review. *Symantec Corp. v. Trustees of Columbia Univ. in City of New York*, IPR2015-00375, Paper 47 at 30 (PTAB Jun. 30, 2016) (Symantec Br., Ex. A at 30, 40).

³ Symantec Br., Ex. A at 25-30, 40. Symantec filed IPR2015-00377 for the ’322 patent on December 5, 2014. The Final Written Decision of this proceedings has been attached as Exhibit B to Symantec’s opening brief. Symantec Br. at Ex. B.

upon identifying the anomalous function call, notifying an application community that includes a plurality of computers of the anomalous function call.

Columbia attempts to paint its invention as an advance over traditional “signature” or “fingerprint” based antivirus analysis that performs “static” analysis. Columbia Br. at 5. This position, however, lacks support in the patent specification. Notably, the only references to “signature” or “fingerprint” analysis are not describing prior art, but rather are describing a feature used by disclosed embodiments. *Compare* ’115 patent at 2:29-31 (briefly mentioning “antivirus software and firewalls” in the background) *with id.* at 6:62-67 (an unclaimed embodiment using “a signature” within an application community).

III. ALICE STEP ONE: THERE IS NO SPECIFIC IMPROVEMENT IN COMPUTER FUNCTIONALITY RECITED IN THE ASSERTED CLAIMS

A. The Asserted Claims Do Not Improve Computer Functionality

The asserted claims are not directed to improvements in computer functionality; rather, they claim an abstract idea. *See* Symantec Br. at 11-19. As Columbia points out, there are a handful of post-*Alice* cases in which the Federal Circuit has held claims directed to purported software innovations are patent eligible (e.g., *Enfish*, *Finjan*., and *Ancora*). Those cases turn on an inquiry of “whether the claims focus on ‘the specific asserted improvement in computer capabilities ... or, instead, on a process that qualifies as an ‘abstract idea’ for which computers are invoked merely as a tool.’” *Finjan, Inc. v. Blue Coat Sys., Inc.*, 879 F.3d 1299, 1303 (Fed. Cir. 2018) quoting *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335–36 (Fed. Cir. 2016).

While Columbia relies heavily on those cases in its opposition, they are plainly distinguishable because Columbia’s asserted claims do not recite any specific asserted improvement in computer capabilities—instead they simply compare a function call to a model of function calls and identify an anomaly. Furthermore, Columbia cannot credibly contend that a

“model of function calls” as recited in the asserted claims is a *specific* technique because the model can be *any* model of function calls. In view of the specification and claim language, it is clear that there is no improvement in computer functionality—computers are merely invoked as a tool to carry out anomaly detection.

1. The *Finjan* Decision Supports Symantec’s Motion

Columbia relies heavily on the holding in *Finjan*, even stating that it “controls the result of Symantec’s motion.” Columbia Br. at 14. But *Finjan* counsels towards **granting** Symantec’s motion, not denying it. In *Finjan*, the Federal Circuit made an important distinction between the *Finjan* patent at issue and prior computer security patents—a distinction that applies here. Prior to reviewing the eligibility of the *Finjan* patent, the Federal Circuit stated that “[b]y itself, virus screening is well-known and constitutes an abstract idea.” *Finjan*, 879 F.3d at 1304 quoting *Intellectual Ventures I LLC v. Symantec Corp.*, 838 F.3d 1307, 1316 (Fed. Cir. 2016). The Federal Circuit continued, stating “[w]e have also found that performing the virus scan on an intermediary computer—so as to ensure that files are scanned before they can reach a user’s computer—is a ‘perfectly conventional’ approach and is also abstract.” *Id.* (quoting *Symantec Corp.*, 838 F.3d at 1321). The distinction the *Finjan* Court relied upon to distinguish other cases was that “[h]ere the claimed method does a good deal more.” *Id.*

The claimed method in *Finjan* created a **new** file, a security profile, that contains “information about potentially hostile operations produced by a ‘behavior-based’ virus scan.” *Id.* This was in contrast to “traditional” approaches, some of which “compar[e] the code in a downloadable to a database of known suspicious code.” *Id.* The Federal Circuit compared the claim at issue to its holding of ineligibility in *Symantec* and the prior art at issue. *Id.* at 1304. The Court concluded that “the method of claim 1 employs **a new kind of file** that enables a computer security system to do things it could **not do before**.” *Id.* at 1305 (emphasis added).

Columbia compares the subject matter of the *Finjan* patent to the asserted patents, stating “[s]imilar to *Finjan*, the Asserted Claims describe methods to analyze the behavior of a program ...protect against previously unknown viruses ... and ...allow the accumulation and utilization of behavior-based information about new threats.” Columbia Br. at 14. Columbia concludes that “*Finjan* directly contradicts Symantec’s assertions that the Asserted Claims are unpatentable because they involve a ‘compare-and-identify process.’” *Id.* at 14. But Columbia plainly misreads the *Finjan* decision.

Unlike the claimed method in *Finjan*, nothing “**new**” is created by the asserted claims “that enables a computer security system to do things it could **not do before**.” *Finjan*, 879 F.3d at 1305 (emphasis added). The asserted claims merely (1) execute a program in an emulator; (2) compare a function call made in the emulator to a model of function calls; and (3) identify the function call as anomalous based on the comparison. Symantec Br. at 2. Tellingly, Columbia fails to address the statements in the patent specification regarding what was known in the art (set forth above), and further fails to address the binding findings from the *inter partes* review proceedings, which found that nearly all limitations were present in the art. Indeed, Columbia fails to specify what, before the claimed invention, a computer security system “could not do before” but can, after the invention, do now.

Referring to the language of the asserted claims, a function call is simply compared to an existing model of function calls and that function call may be identified as anomalous. Columbia correctly does not assert that a “function call” was something that could not be analyzed before. Columbia also cannot colorably argue that the claimed “model” was new—the patents acknowledged using existing modeling approaches. See ’115 Patent at 3:16-19. To the contrary, much like the conventional “code matching” discussed in *Finjan* that “compar[es] the code in a

downloadable to a database of known suspicious code” (*Finjan*, 879 F.3d at 1304), the asserted claims only identify anomalous program executions through comparing a function call to a model of function calls. In fact, the *Finjan* Court’s review of *Intellectual Ventures I LLC v. Symantec Corp*, emphasizes this point: “performing the virus scan [anomaly detection] on an intermediary computer [emulator]—so as to ensure that files [function call] are scanned [compared and identified] before they can reach a user’s computer is a ‘perfectly conventional approach’ and is also abstract.” *Id.* at 1304. The use of “combined models” or of “randomly selecting” one of several models does not add any novelty—a function call is still compared to an *existing* model of function calls. Further, the patents acknowledge that combining multiple models is likewise not new. ’115 Patent at 8:19-21.

The *Finjan* Court further mentioned that “[t]he ‘behavior-based’ approach to virus scanning was pioneered by Finjan’ and [wa]s disclosed in the ... specification.” *Finjan*, 879 F.3d at 1304. Columbia however does not claim to have done any “pioneering” work with the asserted patents. Columbia does not claim to have invented anomaly detection, models of function calls, or an application community, for instance. Nor can it, given the many statements in the patents regarding what existed before. Nonetheless, according to Columbia, the asserted claims “improv[e] overall security by combining models created on different computers and/or at different times and notifying the application community of specific information regarding anomalous functions.” Columbia Br. at 8. But unlike the claims in *Finjan*, none of the alleged improvements in the asserted claims create anything “new ... that enables a computer ... to do things it could not do before.” *Finjan*, 879 F.3d at 1305. The asserted claims’ focus is “not a physical-realm improvement but an improvement in a wholly abstract idea,” and is not eligible

for patenting. *SAP America, Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1168 (Fed. Cir. 2018)⁴.

2. Columbia's Remaining Cited Cases Cited Do Not Support Patent Eligibility of the Asserted Claims

Columbia cites other Federal Circuit cases in addition to *Finjan* in support of its opposition. See Columbia Br. at 15-16. However, these cases do almost no work in Columbia's analysis—Columbia's entire argument under the first step of *Alice* essentially hinges on a comparison to *Finjan*. In fact, Columbia fails to provide any reasoning why these remaining cases support its position or apply to the asserted claims—simply stating these cases have held claims to be patentable. *Id.* at 15. Like *Finjan*, the remaining cases cited by Columbia are distinguishable and do not support the patent eligibility of the asserted claims. A common thread among these cases is that the Federal Circuit found eligibility based on specific features recited in the *claims*. But the asserted claims here cannot survive similar scrutiny.

In *Core Wireless Licensing S.A.R.L. v. LG Elecs., Inc.*, 880 F.3d 1356 (Fed. Cir. 2018), the claims at issue were related to “improved display interfaces, particularly for electronic devices with small screens.” *Id.* at 1359. As opposed to prior art interfaces that “required users to drill down through many layers to get to desired data or functionality,” the Court found that the invention “improve[d] the efficiency of using the electronic device by bringing together ‘a limited list of common functions and commonly accessed stored data.’” *Id.* at 1363. The Court emphasized that the claims at issue were directed to “a particular manner of summarizing and presenting information in electronic devices.” *Id.* at 1362. Specifically, “[t]hese limitations disclose a specific manner of displaying a limited set of information to the user, rather than using conventional user interface methods to display a generic index on a computer.” *Id.* at 1363.

⁴ cert. denied sub nom. *InvestPic, LLC v. SAP Am., Inc.*, No. 18-1199, 2019 WL 1207181 (U.S. June 24, 2019).

Unlike the claims in *Core Wireless*, the asserted claims here do not contain specific limitations that result in an improvement in computer functionality. The concepts of collecting function call information from within an emulator, comparing a function call to a model of function calls (including a combined model), identifying the function call as anomalous, and notifying an application community of the anomalous call are all conventional.

Similarly, in *Data Engine Techs. LLC v. Google LLC*, 906 F.3d 999 (Fed. Cir. 2018), the claims found patent-eligible each recited “a specific interface and implementation for navigating complex three-dimensional spreadsheets using techniques unique to computers.” *Id.* at 1009. The asserted claims do not provide any such specificity, generically reciting identifying a function as anomalous based on a comparison to a model of function calls, without any limitation on how to execute a program, how to compare function calls, how a combined model is created by different computers/at different times, or how an anomaly is identified.

Columbia also fails to mention that the *Data Engine Techs.* Court invalidated several other claims under Section 101 in the same opinion. *Id.* at 1012–13. Those patent-ineligible claims were directed to an abstract concept—“manually tracking modifications across multiple [spread]sheets”—and automating that process. A comparison of claim 2 of the ’322 patent (center) to one of the ineligible claims (left) and one of the eligible claims (right) is attached in Exhibit 1. By examining the claims, it is evident that claim 2 of the ’322 patent, with its simple three-step method, is plainly more comparable to the ineligible claim in *Data Engine*. Like the invalidated claim in *Data Engine*, the asserted claims “do not recite anything ‘more than simply stat[ing] the [abstract idea] while adding the words ‘apply it.’” *Id.* at 1013 citing *Alice Corp. Pty. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2357 (2014) (citations omitted).

In *Ancora*, another case cited by Columbia, the patent at issue claimed a method that

“calls for storage of a license record in a ‘verification structure’ created in a portion of BIOS memory that, unlike the ROM of the BIOS, ‘may be erased or modified’” *Ancora Techs., Inc. v. HTC Am., Inc.*, 908 F.3d 1343, 1345 (Fed. Cir. 2018).⁵ The Court stated that “the claimed advance is a concrete assignment of specified functions among a computer’s components to improve computer security....” *Id.* at 1344. The patent described “[u]sing BIOS memory, rather than other memory in the computer, improves computer security ... because successfully hacking BIOS memory ... is much harder than hacking the memory used by the prior art to store license-verification information.” *Id.* at 1345. In concluding that claim 1 was not directed to an abstract idea, the Court reasoned that “[i]mproving security—here, against a computer’s unauthorized use of a program—can be a non-abstract computer-functionality improvement if **done by a specific technique that departs from earlier approaches** to solve a specific computer problem.” *Id.* at 1348 citing *Finjan*, 879 F.3d at 1304–05 (emphasis added). The Court further stated that “[t]he claimed method here **specifically identifies how** that functionality improvement is effectuated in an **assertedly unexpected way**: a structure containing a license record is stored in a particular, modifiable, non-volatile portion of the computer’s BIOS, and the structure in that memory location is used for verification by interacting with the distinct computer memory that contains the program to be verified.” *Ancora*, 908 F.3d at 1348-1349 (emphasis added). The Court summarized, “[i]n short, claim 1 of the ’941 patent is directed to a solution to a computer-functionality problem: an improvement in computer functionality that has ‘the specificity required to transform a claim from one claiming only a result to one claiming a way of achieving it.’” *Id.* at 1349 quoting *SAP America, Inc.*, 898 F.3d at 1167.

Unlike the claim in *Ancora*, the asserted claims lack “the specificity required to transform

⁵ As amended (Nov. 20, 2018).

a claim from one claiming only a result to one claiming a way of achieving it.” *Ancora*, 908 F.3d at 1349. Nothing in these claims restricts *how* the result is accomplished. Any software alone in combination with hardware can be used to execute a program, any algorithm can be used to compare and identify an anomaly, and any suitable means can be used to combine models of function calls on different computers.⁶ The claim language simply lacks a “**specific technique** that departs from earlier approaches.” *Id.* at 1348 (emphasis added). Hence none of the remaining cases support Columbia’s position under step one of *Alice*.

B. The Asserted Claims Do Not Recite An Improvement In Computer Functionality

Contrary to Columbia’s arguments, the asserted claims do not recite an improvement in computer technology.⁷ Columbia further argues under the first step of *Alice* that “[t]he Asserted Claims also require the use of a ‘model of function calls’—either randomly chosen or created by combining other models created on different computers—to identify threats, and further require notifying other users about those threats [and] [t]ogether, the specific steps set out in the Asserted Claims enable a computer to do things it could never do before.” Columbia Br. at 16. Yet as previously explained, the specification and claims as a whole state otherwise, which was

⁶ The court in *Ancora* stated its conclusion in step one of *Alice* was consistent with its step two analysis in *Intellectual Ventures I LLC v. Symantec Corp.*, 838 F.3d 1307 (Fed. Cir. 2016) which is instructive here. *Id.* Like the asserted claims here, the court stated that “because the claim at issue did not ‘recite[] any improvement to conventional virus screening software, nor ... solve any problem associated with situating such virus screening on the telephone network,’ we held that the patent did not identify a sufficient inventive concept under *Alice* to transform the claimed abstract idea into something patentable.” *Id.* at 1350 (citation omitted).

⁷ Columbia also alleges that, in distinguishing cases cited in Symantec opening brief, Symantec’s oversimplifies the asserted patents. Columbia Br. at 16-17. However, Columbia described the asserted patents in a similar fashion as Symantec in its statement of facts. *Cf.* Columbia Br. at 3-4 and Symantec Br. at 2. Symantec treats the claim language at an appropriate level of abstraction.

reaffirmed by the PTAB in *inter partes* review proceedings. For example, combining models was acknowledged to exist in the art ('115 Patent at 8:18-21), which was reaffirmed by the PTAB in invalidating, e.g., claim 3 of the '115 Patent. Symantec Br., Ex. A at 37-38, 40. With respect to a situation where the models to be combined were generated on different computers, the *Intellectual Ventures* Court found that shifting a security process from one computer to another is entirely conventional. *Symantec*, 838 F.3d at 1320 (“There is no indication that the virus screening software installed on a conventional telephone network processor is any different than the virus screening software ‘[m]any computer users have ... installed on their computers.’”). Further, this limitation is recited generically (without being restricted to any type or location of computer, for instance), and “[t]hese ‘generic computer components [are] insufficient to add an inventive concept to an otherwise abstract idea.’” *Id.* quoting *In re TLI Commc'ns LLC Patent Litig.*, 823 F.3d 607, 614 (Fed. Cir. 2016). That is, there is nothing claimed to be novel about generating one model on one computer and another model on a different computer, versus performing both steps on the same computer.

Similarly, the asserted patents never state that notifying an application community was new, so it was little surprise that the PTAB invalidated claims reciting “notifying an application community,” such as claim 1 of the '115 Patent. Symantec Br., Ex. A at 25-28, 40.

Finally, the alleged “improvement” in randomly selecting a model is likewise entirely conventional, disclosed in the specification as “software registration key[s] provided by a commercial off-the-shelf (COTS) software vendor or some other data providing ‘randomization.’” '115 Patent at 7:1-4. This alleged improvement merely “flow[s] from performing an abstract idea in conjunction with ... well-known [computer functionalities].” *BSG Tech LLC v. BuySeasons, Inc.*, 899 F.3d 1281, 1288 (Fed. Cir. 2018). That is, the “selection . . .

of information” is an abstract idea. *SAP America, Inc.*, 898 F.3d at 1168 (emphasis added) (“the focus of the claims is ... an improvement in wholly abstract ideas—the selection and mathematical analysis of information, followed by reporting or display of the results”).

Put another way, the alleged improvement regarding combining models or randomly selecting a model cannot be “dressed up” as an improvement in computer functionality—something a computer could not do before. The asserted patents acknowledge that combining models was known—the only alleged improvement is combining models that were not generated on a single computer, but were rather generated on different computers. But the generation and combining of models themselves is not novel—the claims merely require the generation to be done on certain computers. That is, the claims essentially state “do it on a computer.” *Apple, Inc. v. Ameranth, Inc.*, 842 F.3d 1229, 1243 (Fed. Cir. 2016).

The random model claims fare worse as they do not even specify what is selecting the model, let alone how. *See e.g.*, ’322 patent at 21:1-4. Further, they are entirely non-specific. They do not specify how models are randomly selected or combined, or what does these tasks.

The application community claims additionally recite notifying members of a community running the same program or a selected portion of the program of the identified anomaly.⁸ Dkt. 123 at 2. Besides being in no sense an “improvement” over prior approaches (as found by the PTAB), notifying an application community of an anomaly without specifying how this is done is not an improvement in computer functionality. *See, e.g.*, ’115 patent at 20:36-46; *see Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1354 (Fed. Cir. 2016) (stating “merely presenting the results of abstract processes of collecting and analyzing information, without more (such as identifying a particular tool for presentation), is abstract as an ancillary part of such

⁸ Found in dependent claims 2, 9, 10, 12, 19 and 20 of the ’115 patent.

collection and analysis”); *FairWarning IP, LLC v. Iatric Sys., Inc.*, 839 F.3d 1089, 1094-1098 (Fed. Cir. 2016). That is, this is merely presenting a result of the abstract process.

Accordingly, by properly focusing on the recited claim language, it is plain that the asserted claims are merely a collection of abstract concepts (*e.g.*, collect, compare, and identify data) rather than an improvement in computer functionality. *See Electric Power*, 830 F.3d at 1353 (holding that claims focused on “collecting information, analyzing it, and displaying certain results of the collection and analysis” are directed to an abstract idea). Nothing in the asserted claims enables a computer system to do things it could not do before. Computers are merely invoked as a tool to carry out anomaly detection. Hence Columbia’s asserted claims are patent ineligible under the first step of *Alice*.

IV. ALICE STEP TWO: A “MODEL OF FUNCTION CALLS” ALONE OR IN COMBINATION WITH AN “APPLICATION COMMUNITY” DOES NOT PROVIDE AN INVENTIVE CONCEPT

Whether the asserted claims have an inventive concept is a question of law. *BSG*, 899 F.3d at 1290. While underlying factual determinations may inform this determination, the inquiry is whether the alleged improvements are evident in the language of the claims. *Id.* When the inquiry is properly focused on the claim language itself, it is apparent as a matter of law that the asserted claims are not directed to an inventive concept.

Columbia does not, and cannot, dispute that the components used in connection with asserted claims are conventional. Columbia Br. 20-26. The components generally recited in the asserted claims are an “emulator” and “different computers.” ’322 patent at 20:47-55. Columbia instead argues that the claim element “model of function calls” “based on” different models from different computers (“combined model”) or randomly-selected models (“random model”) provides an inventive concept. Columbia Br. 22-24. Alternatively, Columbia argues that the “model of function calls” and “application community” elements as an ordered combination also

provides an inventive concept. *Id.* at 24-25.⁹ Columbia focuses heavily on the patent specification in an attempt to highlight the importance of using a “model of function calls” as a combined model and/or as a randomly selected model.¹⁰ But the Federal Circuit has repeatedly held that, in assessing *Alice* step two, courts must focus on the text of the claims, not on unclaimed technical detail in the specification. *See, e.g., Synopsys, Inc. v. Mentor Graphics Corp.*, 839 F.3d 1138, 1149 (Fed. Cir. 2016). It does not matter how sophisticated or complex a description of the alleged inventions may be in the specification—the focus of this step is the claims. *Id.* at 1149; *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1369 (Fed. Cir. 2018).

A. The Asserted Claims Are Merely Drawn to a Result and Lack an Inventive Concept

Columbia argues that “[t]he remainder of Symantec’s ‘step two’ analysis focuses on an alleged deficiency in the amount of detail provided in the Asserted Claims ... [b]ut these issues are simply irrelevant to step two of *Alice*.” Columbia Br. 27. Columbia reasons that “[t]he question at step two is not whether the claims describe how to practice each claim element individually, but how those elements were used in the invention in a manner that was not well-understood, routine, or conventional to achieve the desired result of the invention.” *Id.*

⁹ It is worth noting that selecting random models, combined models, and the application community are not even mentioned in the summary of the invention. ’322 patent at 1:49-2:36.

¹⁰ Columbia ends its argument stating that Symantec’s only affirmative evidence is lines from the specification in which Symantec “selectively edits to remove the innovations the specification discloses.” Columbia Br. at 26. Unfortunately, for Columbia these admissions, as simple as they are, remain in the specification. The asserted claims do not exclude these embodiments and simply lack an inventive concept. These admissions demonstrate that *any* algorithm, *any* software alone or combination with *any* hardware can be used to carry out the claims. ’322 patent at 3:16-19, 28-45; 7:7-10; 8:22-27, 30-37, 40-44; 19:37-20:23. *Berkheimer v. HP Inc.*, 890 F.3d 1369, 1371 (Fed. Cir. 2018) (Moore, J.) (denial of rehearing en banc).

Columbia concludes that “Symantec’s arguments miss the point.” *Id.* But this is simply incorrect. The proper inquiry under the second step of *Alice* is whether the *claim elements* provide an inventive concept. *BSG*, 899 F.3d at 1289-90. The focus is on the language of the asserted claims. *RecogniCorp, LLC v. Nintendo Co.*, 855 F.3d 1322, 1327 (Fed. Cir. 2017)¹¹. And one part of the inventive step analysis is whether the purportedly inventive claim limitations are “specified at a high level of generality.” *Alice*, 134 S. Ct. at 2350, quoting *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, 132 S. Ct. 1289, 1292 (2012).

Applying this analysis, in its opening brief, Symantec argued that the asserted claims lack an inventive step and merely claim an abstract result¹²—i.e, identifying a deviation in data based on a comparison of data. Symantec Br. 21-23. There is nothing in the asserted claims “directed to *how* to implement” the idea of identifying a deviation in data based on a comparison. In other words, the asserted claims are drafted at a high level of generality that is not enough to supply an inventive concept. *Alice*, 134 S. Ct. at 2357. Therefore, taken together or individually, the elements of the asserted claims lack an inventive concept because *any* algorithm, *any* software, or *any* hardware can be used. Hence the asserted claims lack an inventive step.

B. The “Model of Function Calls” Element Recited in the Asserted Claims Fails to Provide an Inventive Concept

Columbia contends under step two of *Alice* that the “model of function calls” element either selected randomly or as a combined model provides an inventive concept. Columbia Br.

¹¹ cert. denied, 138 S. Ct. 672 (2018).

¹² Whether a claim is a merely directed to a result is usually considered under the first step of *Alice*. But “[w]hile each step involves its own separate inquiry, [the Federal Circuit] ha[s] explained that they may ‘involve overlapping scrutiny of the content of the claims.’ *Interval Licensing LLC v. AOL, Inc.*, 896 F.3d 1335, 1342 (Fed. Cir. 2018) quoting *Elec. Power*, 830 F.3d at 1353. Here Symantec simply concludes the asserted claims are directed to an abstract result and lack an inventive step under the same reasoning.

at 22. Columbia argues that the “model of function calls” “does not merely require generic computer implementation ... but is itself a specific improvement in computer technology.” *Id.* citing *Alice*, 573 U.S. at 221. Columbia is not correct.

Columbia first relies on its amended complaint for support, arguing that “[a]s the complaint alleges, the model disclosed and claimed in the patents ‘can be trained to analyze large amounts of data about various kinds of files and generate detection models that far more effectively distinguish normal computer operation from anomalous or malicious behaviors’ and constituted an ‘advancement[.]’ over prior technology.” *Id.* Columbia’s vagueness in referring generally to “the patents” appears to have been intentional. There is nothing to suggest that this statement relates to the patents *remaining in the case*, instead of other patents that were asserted in the Amended Complaint but no longer at issue. After all, the quoted excerpt is only describing “one example of their” work. Dkt. 12 ¶ 15. In fact, this statement almost certainly relates to a different patent family that is no longer asserted, U.S. Patent Nos. 7,487,544 and 7,979,907. That is because this statement refers to “executable programs (such as those that may be in an email attachment).” Dkt. 12 ¶ 15. And that family of patents (no longer asserted here) is directed to a “system and methods for detecting malicious ***executable attachments at an email processing application*** of a computer system using data mining techniques.” ’544 Patent at Abstract (emphasis added). Indeed, the remaining patents do not discuss email attachments. That paragraph of the Amended Complaint later and separately mentions “systems whereby information about the detected intrusions can be rapidly and efficiently deployed and shared across communities of users.” Dkt. 12 ¶ 15. This second statement may in fact refer to the asserted ’115 and ’322 Patents, but Columbia correctly does not rely on it, because it does not offer any support for “why aspects of its claimed inventions were not conventional.” *Cellspin*

Soft, Inc. v. Fitbit, Inc., 927 F.3d 1306, 1317-1318 (Fed. Cir. 2019).

In addition, the patents themselves belie any assertion that these claim limitations are anything other than conventional. For instance, the asserted patents acknowledge that combining models was known in the art, stating that “a newly created model can be algorithmically combined with the older model using any of a variety of suitable means.” ’115 patent at 8:19-21, 42-44. The patent specification also provides that existing off the shelf software or other data providing randomization can be used for random model building. *Id.* at 7:7-10. There is nothing inventive about these two limitations.

Furthermore, the language of the asserted claims lacks any substance that could possibly amount to an inventive concept—failing to recite *how* a model is combined using different computers and *how* a model is selected randomly. The random model claims do not even recite *what* is randomly selecting the model for comparison. Simply put, drafted at a high level of generality in the asserted claims, the use of random models or combined models is merely a conventional means for comparing data. *See Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 716 (claimed sequence of steps comprising only “conventional steps, specified at a high level of generality” is “insufficient to supply an ‘inventive concept.’”).

Moreover, with respect to both of these limitations, Columbia ignores a critical factor in the inventive step analysis. Columbia places much significance on the fact that both the combined model and randomization limitations allegedly “create more ‘efficient’ computer functionality, because, from the user’s perspective, only one model (or portions thereof) out of multiple models is used on, or created by, any particular computer.” Columbia Br. at 23. Columbia further argues that these approaches solve a “concept-drift problem” because they allow for “an update of the old model into a new one sufficient to make ‘attacks far more

difficult to achieve.” Columbia Br. at 23-24. But Columbia ignores the critical fact that the concept of “combined models,” including combining models generated at different times, was found to be disclosed by the prior art by the PTAB. Symantec Br., Ex. A 37-38, 40. For instance, claim 3 of the ’115 Patent, which recites “creating a combined model from at least two models created at different times,” was found to be invalid by the PTAB. *Id.*; ’115 patent at 20:50-52; *see id.* at 8:9-31 (describing combining models generated at different times as a possible solution to the “concept drift” problem). In other words, Columbia’s alleged multiple model invention for solving this “concept drift” problem was already found to be present in the prior art and therefore “conventional.”

C. The Ordered Combination of the “Model of Function Calls” and “Application Community” Elements Does Not Provide an “Inventive Concept”

Columbia also alleges that an inventive concept can be found in the “arrangement of the ‘model of function calls’ element and the ‘application community’ element in each of the Asserted Claims.” This argument fails for the simple reason that the alleged “inventive concept” pointed to by Columbia has no basis in the claim language.¹³

Columbia’s opposition describes this allegedly inventive arrangement in multiple ways, including stating:

- “models are shared among many members of a community running the same application,”;
- “sharing the computational load among an application community,” “spreading the processing power needed to create such a ‘model of function calls’ across an ‘application community’ required each individual computer in an application community to dedicate only a small portion of its resources to such analysis,”; and

¹³ This argument also is only applicable to the asserted claims that recite an “application community,” namely claims 2, 9, 10, 12, 19 and 20 of the ’115 patent. In other words, claims 23, 30, 31, 33, 40, and 41 of the ’115 patent and claims 2, 8, 11, 17, 25, and 27 of the ’322 patent are not impacted by this analysis.

- “instead of running a particular application for days at a single site, many (e.g., thousands) replicated versions of the application may be run for a shorter period of time (e.g., an hour) to obtain the necessary models.”

Columbia Br. at 24-26. None of these concepts described by Columbia, however, are actually present in the *claims*. See *RecogniCorp, LLC*, 855 F.3d at 1327¹⁴ (“To save a patent at step two, an inventive concept must be evident in the claims; ... [t]he § 101 inquiry must focus on the language of the Asserted Claims themselves.”). The only time “application community” appears in the asserted claims is in the context of “upon identifying the anomalous function call, notifying an application community that includes a plurality of computers of the anomalous function call.” ’115 patent at 20:44-47; 21:12-14. In other words, the claims do not tie the application community concept to model building at all—the “application community,” in the claims, appears solely as a recipient of a notification. The claims do not require building models to be distributed across members of the application community, the application to be modeled across members of the application community, or sharing any computational load across an application community. Hence the asserted claims fail to capture any of Columbia’s alleged inventive concepts.

V. CONCLUSION

The asserted claims of the ’115 and ’322 patents are directed to an abstract idea and lack an inventive concept. Hence the asserted claims are invalid under 35 U.S.C. § 101 and therefore, Symantec’s Motion for Judgment on the Pleadings should be granted.

¹⁴ citing *Alice*, 134 S.Ct. at 2357 (internal citation and quotation omitted).

Respectfully submitted,

SYMANTEC CORPORATION

By: /s/

Dabney J. Carr, IV, VSB #28679
TROUTMAN SANDERS LLP
P. O. Box 1122
Richmond, Virginia 23218-1122
Telephone: (804) 697-1200
Facsimile: (804) 697-1339
dabney.carr@troutmansanders.com

David A. Nelson (*pro hac vice*)
davenelson@quinnemanuel.com
Stephen A. Swedlow (*pro hac vice*)
stephenswedlow@quinnemanuel.com
500 West Madison St., Suite 2450
Chicago, Illinois 60661
Telephone: (312) 705-7400
Facsimile: (312) 705-7401
QUINN EMANUEL URQUHART & SULLIVAN
LLP

Yury Kapgan (*pro hac vice*)
yurykapgan@quinnemanuel.com
865 S. Figueroa St., 10th Floor
Los Angeles, California 90017
Telephone: (213) 443-3000
Facsimile: (213) 443-3100
QUINN EMANUEL URQUHART &
SULLIVAN LLP

Derek L. Shaffer (*pro hac vice*)
derekshaffer@quinnemanuel.com
777 6th Street NW, 11th floor
Washington, D.C. 20001-3706
Telephone: (202) 538-8000
Facsimile: (202) 538-8100
QUINN EMANUEL URQUHART &
SULLIVAN LLP

ATTORNEYS FOR DEFENDANT SYMANTEC
CORPORATION

CERTIFICATE OF SERVICE

I hereby certify that on August 19, 2019, I electronically filed the foregoing pleading with the Clerk of Court using the CM/ECF system, which then will send automatic notification of such filing (NEF) to the following:

Dana D. McDaniel (VSB No. 25419)
dmcdaniel@spottsfain.com
John M. Erbach (VSB No. 76695)
jerbach@spottsfain.com
Spotts Fain, P.C.
411 East Franklin Street, Suite 600
Richmond, Virginia 23219
Phone: (804) 697-2065
Fax: (804) 697-2165

Garrard R. Beeney (*pro hac vice*)
beeneyg@sullcrom.com
Stephen J. Elliott (*pro hac vice*)
elliotts@sullcrom.com
W. Rudolph Kleysteuber (*pro hac vice*)
kleysteuberr@sullcrom.com
Dustin F. Guzior (*pro hac vice*)
guziord@sullcrom.com
SULLIVAN & CROMWELL LLP
125 Broad Street
New York, New York 10004
Phone: (212) 558-4000
Fax: (212) 558-3588

***Counsel for The Trustees of Columbia University
In the City of New York***

/s/

Dabney J. Carr, IV, VSB #28679
TROUTMAN SANDERS LLP
P. O. Box 1122
Richmond, Virginia 23218-1122
Telephone: (804) 697-1200
Facsimile: (804) 697-1339
dabney.carr@troutmansanders.com
Counsel for Defendant Symantec Corporation